SITE NEED STATEMENT

General Reference Information

Need Title: **Oversize TRU Waste Boxes Transportation**
Need Code: NV26-0200-04
Need Summary: A method is needed for transporting oversize TRU waste boxes to an off-site size-reduction facility. There are 58 large steel boxes of oversize TRU waste at the Nevada Test Site that need to be size-reduced to fit into Waste Isolation Pilot Plant (WIPP) approved standard waste boxes or drums. Use of an existing size-reduction facility at another DOE site appears to be the most cost-effective alternative at this time. A transportation method needs to be identified for all the NTS TRU waste boxes currently in storage. There is a similar need at the Lawrence Livermore National Laboratory for transporting large TRU waste boxes (see DOE Oakland Operations Office Technology Need OK01-32). Developing a transportation method will eliminate the need for further surveillance, maintenance, and control expenditures and will ensure compliance to the NTS Federal Facility Compliance Act (FFCAct) Site Treatment Plan (STP). The current WIPP shipping schedule includes a window of opportunity for the transport of the NTS oversize TRU to WIPP (FY 2005) should the transportation method be identified and implemented, and size reduction, repackaging, and subsequent waste certification take place in time.
Origination Date: August 1, 2001
Need Type: Technology
Operations Office: NNSA/NV
Geographic Site Name: Nevada Test Site
Project: NV350/TRU/Mixed TRU
National Priority: Medium
Operations Office Priority: 4 of 13

Problem Description Information

Operations Office Program Description: The mission of the NNSA/NV Waste Management Division is to provide safe, cost-effective, and environmentally sound hazardous and radioactive waste operational, technical and transportation planning services to on-site and off-site generators and others seeking to use NTS resources, while protecting the public and the environment.

Need/Problem Description: A method is needed for transporting oversize TRU waste boxes to an off-site size-reduction facility. There are 58 large steel boxes of oversize TRU waste at the Nevada Test Site that need to be size-reduced to fit into Waste Isolation Pilot Plant (WIPP) approved standard waste boxes or drums. Use of an existing size-reduction facility at another DOE site appears to be the most cost-effective alternative. However, a transportation method needs to be identified for the NTS TRU waste boxes, all of which are not appropriate for transport in the TRUPACT II shipping container. There is a similar need at the Lawrence Livermore National Laboratory (LLNL) for transporting large TRU waste boxes (see DOE Oakland Operations Office Technology Need OK01-32). Developing a transportation method will eliminate the need for further surveillance, maintenance, and control expenditures. The current WIPP shipping schedule includes a window of opportunity for the transport of the NTS oversize TRU to WIPP (FY 2005) should the transportation method be identified and implemented, and size reduction, repackaging, and subsequent waste certification take place in time.

Functional Performance Requirements: This new transportation method must be capable of the following:

- Handle all size oversize TRU Waste boxes, which range in length up to 13’7”, in width up to 6’4”, and height up to 6’9”.
- Be capable of handling oversize TRU waste boxes with up to 55 grams of Pu-239
- Be capable of handling oversize TRU waste boxes weighing up to 6,100 lbs.
- Shipping method and shipping container meets requirements of DOE, NRC, or DOT as applicable
- Transportation by truck is assumed.

Definition of Solution: Deployment of an innovative transportation method that allows all of the oversize

	TRU waste boxes to be shipped to a DOE off-site location for further disposition.
Targeted Focus Area:	TRU and Mixed Waste
Potential Benefits:	The ability to disposition one NTS legacy waste stream for which the defined path forward cannot proceed is the main benefit. Cost avoidance from not having to store, survey and maintain the waste for an indefinite period of time is also important.
Potential Cost Savings:	See narrative below
Potential Cost Savings Narrative:	Because this technology is already counted as part of the NNSA/NV waste management baseline, there are no cost savings to identify in comparison to the baseline. Should the baseline plans for the deployment of this technology not be realized, there would be a cost incurred for continued surveillance, maintenance, and security control. Deployment of this technology results in a cost avoidance. The cost avoidance potential is dependent on the implementation time frame and availability of a transportation method. The earlier the transportation method and off-site size-reduction facility become available, the higher the cost avoidance will be. The current cost for maintaining the oversize TRU waste boxes is approximately $20,000 per year. A potential also exists for substantial fines and penalties associated with non-compliance with the NTS Site Treatment Plan (STP) under the Federal Facilities Compliance Act. If a transportation method does not become available in sufficient time to maintain the schedule in the Waste Management Baseline (parallels the schedule in the STP), the State of Nevada may impose penalties including fines of up to $15,000 per week.
Technical Basis:	The oversize TRU waste boxes are too large to be handled by the NTS WIPP certification system, and are too large to be loaded into WIPP approved shipping containers. Therefore, the boxes and contents need to be size-reduced as noted previously. The Super Tiger container has been identified as a potential Type B container to ship some of the boxes (not the largest ones) to an off-site location for size-reduction and subsequent disposition. Furthermore, there appears to be some uncertainty about stakeholder acceptance of this type of container. Without the identification and implementation of a transportation method for all the oversize TRU waste boxes, the boxes will continue to be stored, and be subject to weekly inspections mandated by hazardous waste regulations. Lack of a transportation method could ultimately result in NTS, LLNL and other sites having to construct individual on-site size-reduction facilities.
Cultural/Stakeholder Basis:	Local stakeholder opinion is based on environmental, health and safety issues. Removal of hazardous waste from the site is viewed as a reduction in the overall mortgage that exists on the NTS. Disposition of this TRU waste at another site will help address the waste disposal equity issue from a Nevada stakeholder perspective.
Environmental, Safety and Health Basis:	Even though the potential for a release or failure of the waste containment system is remote, the waste contains constituents that would be considered detrimental to human health and the environment.
Regulatory Drivers:	Mixed waste is regulated by the State of Nevada under RCRA authority, and requires weekly inspections.
Milestones:	Not applicable
Material Streams:	Legacy TRU boxes (1056), technical risk score 1. Not on critical path to closure.
TSD System:	To be determined
Major Contaminants:	Pu-239
Contaminated Media:	Steel boxes filled with glove boxes, equipment, piping, etc.
Volume/Size of Contaminated Media:	58 oversize TRU boxes, 267 cubic meters
Earliest Date Required:	FY 2002
Latest Date Required:	FY 2003

Baseline Technology Information

Baseline Technology Process:	The current NNSA/NV Waste Management Division baseline includes transporting the oversize TRU waste boxes to an off-site facility for size-reduction, certification and disposition at WIPP. The baseline schedule assumes a transportation method will be available in sufficient time to meet the ultimate WIPP shipping

	window for this waste.
Life-cycle Cost Using Baseline:	Approximately $13 million in un-escalated dollars ($15 million in escalated dollars)
Uncertainty on Baseline Life-cycle Cost:	The waste management baseline assumption for the oversize TRU boxes is to ship them to an off-site location. The life-cycle cost includes costs to prepare the waste for shipment, costs to size-reduce the waste, costs to repackage and characterize the waste for WIPP, and costs to load the TRUPACTII WIPP shipping containers. The life-cycle cost is a rough order-of-magnitude estimate.
Completion Date using Baseline:	FY 2005

Points of Contact (POC)

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